Computing Machinery I
Assignment 4
8% of your final score
Due November 20th @ 11:59PM MST

Lead TA
The lead TA for this assignment is Kostas Liosis (konstantinos.liosis@ucalgary.ca)

Objective
The objective of this assignment is to practice using 2D arrays and structures in ARMv8 assembly.

New Skills needed for this assignment
- Ability to work with 2D arrays in ARMv8 assembly
- Ability to use structures in ARMv8 assembly

Note
You may re-use some of your code from Assignment 2.

Overview
Your program will simply generate a table of random positive integers. Each integer must not exceed 16. The dimensions of this M×N table are to be specified by the user through command line arguments. M and N should be between 4 and 16.

Details
This is an emulation of a search engine.
1 - Your program will randomly create a table of integers and display it on the screen. The rows of this table represent text documents, and the columns represent words that may exist in these text documents. Each cell with coordinates [i,j] in the table represents the number of occurrences of word j in document i. The frequency of a word j in a document i is j's number of occurrences * 100 in doc i / size of document i The size of document i (row i) is the sum of occurrences of all its words (sum of all columns in row i).
2 – Your program stores the table on the stack. It needs also to compute and store for each document i the index and the frequency of its most frequent word as a structure on the stack.
3 - For each document, the index of its most frequent word, the number of occurrences and its frequency must be displayed.

Submission
- **Note:** The lead TA may provide further submission instructions.
- Name your programs *assign4.asm*
- Create a script file *assign4.script*. **The script file must contain a GDB session.**
- Submit a *README* file providing extra instructions or information for your TA (optional)
- Submit your work to the appropriate dropbox on D2L.

Late Submission Policy
Late submissions will be penalized as follows:
-12.5% for each late day or portion of a day for the first two days
-25% for each additional day or portion of a day after the first two days
Hence, no submissions will be accepted after 5 days (including weekend days) of the announced deadline.

Academic Misconduct

This assignment is to be done by individual students: your final submission must be your own original work. Teamwork is not allowed. Any similarities between submissions will be further investigated for academic misconduct. While you are encouraged to discuss the assignment with your colleagues, this must be limited to conceptual and design decisions. Code sharing by any means is prohibited, including *looking* at someone else's paper or screen. The submission of compiler generated assembly code is absolutely prohibited. Any re-used code of excess of 5 lines in C and 10 lines in assembly (10 assembly language instructions) must be cited and have its source acknowledged. Failure to credit the source will also result in a misconduct investigation.

D2L Marks

Marks posted on D2L are subject to change (up or down).

Computing Machinery I
Assignment 4 Rubric

Student:_____

Item	**Max Points**	**Points**	**Comments**
Code compiles	5		
Code runs	5		
Random 2D array	15		
Index of the most frequent word (15points) and its frequency (15points) for each document.	30		
User interface (input validation, implementing all features)	10		
Use of structures	10		
Use of an array of structures	10		
Script file	5		
Code readability (formatting and documentation)	10		
Total Points	**100**		